

**WELLS G&H SUPERFUND SITE  
WOBURN, MASSACHUSETTS**

**VAPOR INTRUSION ASSESSMENT WORK PLAN  
REVISION 1**

**AND**

**QUALITY ASSURANCE PROJECT PLAN FOR  
VAPOR INTRUSION ASSESSMENT**

PREPARED FOR:

W.R. GRACE & CO. – CONN.  
62 WHITTEMORE AVENUE  
CAMBRIDGE, MASSACHUSETTS 02140

**AND**

UNIFIRST CORPORATION  
68 JONSPIN ROAD  
WILMINGTON, MA 01887

PREPARED BY:

GEOTRANS, INC.  
12 SPRING STREET  
SCHUYLerville, NY 12871

GEOTRANS PROJECT NO. 117-3008059

MARCH 25, 2010



12 Spring Street, Suite 102, Schuylerville, New York 12871

# VAPER INTRUSION ASSESSMENT WORK PLAN

## REVISION 1

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WOBBURN, MASSACHUSETTS

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# **1 INTRODUCTION**

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As requested by the United States Environmental Protection Agency (USEPA), this revised Vapor Intrusion Assessment (VIA) Work Plan is being submitted on behalf of W.R. Grace & Co. – Conn (Grace) and UniFirst Corporation (UniFirst) to assess the potential for vapor intrusion from volatilization of compounds in groundwater in a portion of the Northeast Quadrant of the Wells G&H Superfund Site (Site). The Site, Grace and UniFirst properties, and the VIA study area are shown on Figure 1-1.

As USEPA stated in its 2004 Five-Year Review (USEPA, 2004), the potential vapor intrusion pathway in this portion of the Site has been evaluated repeatedly in the past 20 years. The area was the subject of indoor air sampling in July 1989 and October 1991, followed by an evaluation of those data in 1995 (ATSDR, 1995). In 1989, 1991, and 1995, USEPA and ATSDR concluded that the vapor intrusion pathway presented no apparent public health hazard. USEPA reexamined the historical data in 2004 and reached the same conclusion based on current toxicological information. In 2004, USEPA also conducted vapor intrusion modeling using then current groundwater contaminant concentrations, measured as part of the long-term monitoring programs instituted by Grace and UniFirst in the Northeast Quadrant. USEPA concluded in 2004 that estimated risks based on its modeling results “are within or below EPA risk management guidelines, confirming earlier results based on indoor air sampling” (USEPA, 2004).

The potential for vapor intrusion in the study area will be re-evaluated through an initial groundwater sampling event at specific locations, followed by a second round of sampling approximately six months after the initial sampling round. A report describing the results of the assessment will be provided to USEPA within 60 days after receipt of the validated analytical data from the second groundwater sampling event. To the extent possible, one of these two VIA sampling events will be scheduled to coincide with the annual sampling of monitoring wells located on the Grace and UniFirst properties and in the Northeast Quadrant of the Wells G&H Site.

## **1.1 BACKGROUND**

### **1.1.1 HYDROGEOLOGIC SETTING**

The Northeast Quadrant of the Site is underlain by glacially derived unconsolidated deposits and crystalline bedrock. The unconsolidated deposits beneath the eastern portion of the Northeast Quadrant vary in thickness and composition, but generally consist of ablation and lodgment till comprised of low-permeability over-consolidated poorly-sorted sand, gravel, silt, and clay. In the central portion of the Aberjona River valley more permeable stratified sand and gravel generally overlie the till deposits. Fractures in the crystalline bedrock allow relatively high well yields, such as that achieved by UniFirst recovery well UC22, in some areas of the Site.

Prior to implementation of the combined groundwater remedies, groundwater from the Grace and UniFirst properties flowed westerly and southwesterly beneath the study area towards the Aberjona River.

Grace and UniFirst began operating coordinated groundwater remedies in the Northeast Quadrant of the Site on September 30, 1992. The UniFirst on-property groundwater recovery and treatment system has sustained a widespread capture zone that extends well beyond the UniFirst property boundaries in unconsolidated deposits and in bedrock. The system is preventing contaminated groundwater from flowing off the UniFirst property and reducing volatile organic compound (VOC) concentrations in groundwater in unconsolidated deposits on the UniFirst property. In addition the deep bedrock extraction well on the UniFirst property (UC22) is recovering contaminated groundwater throughout the zone of capture in the Northeast Quadrant, including from deep bedrock beneath the Grace property.

The Grace on-property groundwater recovery and treatment system has prevented contaminated groundwater from flowing off the Grace property in the unconsolidated deposits and shallow bedrock, and significantly reduced VOC concentrations in groundwater in these deposits across the property. Contaminated groundwater in the deep bedrock beneath the Grace property is captured by UC22, the deep bedrock recovery well located on the nearby UniFirst property.

### **1.1.2 NATURE AND EXTENT OF GROUNDWATER CONTAMINATION**

The combined Grace and UniFirst groundwater remedies affect a large portion of the Wells G&H Site and have significantly reduced the contaminant concentrations in groundwater in the Northeast Quadrant of the Site. These effects are apparent from the results of extensive water-level measurements and analysis of groundwater quality samples collected from monitoring and recovery wells, and from treatment system influent and effluent water quality samples collected since the recovery wells began operating in September 1992 (GeoTrans, 2008; Harvard Project Services, 2008).

The Northeast Quadrant groundwater remedy performance monitoring data indicate that VOC concentrations in the saturated unconsolidated deposits in the study area have been substantially reduced since the recovery wells began operation. Along the Grace property western boundary, VOC concentrations at all unconsolidated deposit monitoring wells and all recovery wells have been reduced to less than the cleanup goals. Along the Grace southern property boundary, VOC concentrations have been substantially reduced and are at or approaching the cleanup goals in all recovery wells. VOC concentrations at monitoring well G24S remain above the cleanup goals. Along the UniFirst western property boundary, VOC concentrations in all unconsolidated deposit water table monitoring wells are below the cleanup goals. Along the UniFirst southern property boundary, the VOC concentrations at monitoring well S71S have been reduced substantially, but remain above cleanup goals. Long-term monitoring data indicate that VOC concentrations at the unconsolidated deposit water table wells at S63 and GO1, located south of the Dewey Avenue neighborhood, were reduced to less than the laboratory detection limits by 1993 and 1994, respectively. In the two unconsolidated deposit wells located directly west of the Dewey Avenue neighborhood, S81S and S82, with the exception of tetrachloroethene (PCE) at S81S, VOC concentrations have been reduced to less than the cleanup goals. Figures 1-2 through 1-5 show the current distribution of PCE, trichloroethene (TCE), cis-1,2-dichloroethene (DCE), and vinyl chloride (VC) concentrations in unconsolidated deposits groundwater in the VIA study area. These figures were prepared using the 2009 monitoring data augmented with data from the most recent samples collected from monitoring wells GO1S, S63S, and S82. Long-term monitoring sampling of wells GO1S and S63S was stopped in 1996 following several successive samples with concentrations below the ROD cleanup levels. USEPA collected samples from S63S and S82 in 2002.

## 1.2 VAPOR INTRUSION ASSESSMENT ACTIVITIES

The VIA will include the installation and sampling of new shallow groundwater monitoring wells in addition to sampling existing shallow monitoring wells to evaluate the potential risks of vapor intrusion in the study area. Groundwater samples will be analyzed for VOCs by USEPA Method 8260B, with selected ion monitoring mode (SIM) where necessary and possible to achieve applicable reporting limits.

Grace and UniFirst have designed these investigations to address the USEPA request related to evaluating the potential for vapor intrusion in the study area by determining if VOCs are present in the shallow groundwater at sufficient concentrations to pose a vapor intrusion risk to nearby structures. To collect the information to assess the potential for vapor intrusion, the following work is proposed:

- Install two shallow monitoring wells west of the UniFirst property;
- Install nine shallow monitoring wells in the Dewey Avenue neighborhood;
- Install two shallow monitoring wells south of the Grace property; and
- Collect groundwater samples for VOC analyses from all newly installed wells and from seven existing water table groundwater monitoring wells.

In addition, UniFirst intends to collect shallow groundwater data concurrently with the VIA to evaluate shallow groundwater VOC concentrations at the water table using existing, useable water-table monitoring wells on the UniFirst property (The Johnson Company, 2010).

Section 2 of this Work Plan describes the work related to the installation and sampling of the monitoring wells and Section 3 describes the vapor intrusion assessment to be done. Section 4 presents a proposed schedule, and Section 5 provides references cited in this Work Plan.

## **2 MONITORING WELL INSTALLATION AND GROUNDWATER SAMPLING**

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Grace and UniFirst propose to install 13 shallow groundwater monitoring wells and collect groundwater samples from them. In addition, groundwater samples will be collected from seven existing groundwater monitoring wells in the study area to further assess the potential for vapor intrusion in the VIA study area. These data will reflect the VOC concentrations in the groundwater at the water table within the VIA study area.

### **2.1 MONITORING WELL INSTALLATION AND SAMPLING**

To assess the potential for vapor intrusion in the study area, 13 2-inch diameter shallow monitoring wells will be installed. The proposed well locations are shown on Figure 2-1. The wells will be drilled to a depth of approximately ten feet below the water table. It is anticipated that monitoring well depths will be 15 to 30 feet below ground surface. It is also anticipated that most, if not all, of the wells will be screened in the unconsolidated deposits. At locations where the water table is near or below the bottom of the unconsolidated deposits, the wells will extend into bedrock. Drilling will be conducted using roto sonic and/or rotary techniques. Two-inch diameter polyvinyl chloride (PVC) wells with ten feet of ten-slot screen will be installed such that the water table is within the screened interval of the well. The wells will be completed to grade with flush-mount well caps. Well development will take place at the time of installation. All development water will be contained and treated at the Grace or UniFirst groundwater treatment system. Detailed procedures for well installation and development are presented in Appendix 2 of the Quality Assurance Project Plan for Vapor Intrusion Assessment (QAPP) (GeoTrans, 2010). Well installation details will be recorded in field books and presented on Field Boring Logs.

Headspace field screening will be conducted during drilling with a photo-ionization detector (PID). Drill cuttings will be screened at five-foot intervals. Detailed procedures for dealing with drill cuttings are presented in Appendix 2 of the QAPP. Unconsolidated deposit samples and bedrock cores will be described by GeoTrans field personnel.

All proposed monitoring wells within the Dewey Avenue neighborhood will be installed on City of Woburn property. The proposed wells south of the Grace property and west of the UniFirst property will be installed on Cummings property. Appropriate local permits, access

agreements, and police detail, if required, will be arranged prior to initiating work conducted in or near public roadways or on public property.

## **2.2 WELL INTEGRITY TESTING**

Prior to collecting samples from existing monitoring wells not included in the Grace and UniFirst Northeast Quadrant remedy long-term monitoring programs (GO1S, K55S, K60S, S21, S22, and S63S), well integrity tests will be conducted. These tests will include a visual inspection of the well, depth measurement to confirm well depth, and a slug test with water level measurements to confirm the hydraulic connection of the well to the saturated unconsolidated deposits. If the well integrity tests indicate that well development is necessary, the wells will be redeveloped by bailing. These wells will not be sampled if the well integrity tests indicate that the wells are not usable. Detailed procedures for well integrity testing are presented in Appendix 2 of the QAPP (GeoTrans, 2010)

## **2.3 GROUNDWATER SAMPLING**

Two rounds of groundwater samples will be collected from the new monitoring wells listed in Table 2-1, and the seven existing monitoring wells listed in Table 2-2. The wells proposed for sampling are shown on Figure 2-1. In order to collect samples that are representative of the groundwater quality at the water table, the sampling will be performed using the low-flow groundwater sampling methodology described in Appendix 2 of the QAPP (GeoTrans, 2010). Groundwater sampling will begin approximately two weeks after well development is completed. The groundwater samples will be sent to a laboratory for analysis of the VOC analytes listed in Table 2-3. The samples will be analyzed using USEPA Method 8260B, with SIM where necessary and possible to achieve applicable reporting limits. Table 2-3 represents all VOCs where the maximum concentration detected in groundwater in monitoring wells located on either the Grace or UniFirst properties was greater than the EPA-proposed Screening Criteria (USEPA, 2010) or where the previous detection limits were greater than the EPA-proposed Screening Criteria. These groundwater data will provide shallow groundwater quality to aid in the VIA.

Analytical methods to be used for the groundwater samples, sample bottles, preservatives, and laboratory holding times are specified in the QAPP (GeoTrans, 2010). All

data will be recorded in field log books and presented on the appropriate field forms as found in the QAPP (GeoTrans, 2010). Chain-of-custody and sample packaging and shipment procedures that will be followed are outlined in the QAPP (GeoTrans, 2010).

**Table 2-1 New Monitoring Wells Proposed for Sampling**

UG8	UG12	UG16	UG20
UG9	UG13	UG17	
UG10	UG14	UG18	
UG11	UG15	UG19	

**Table 2-2 Existing Monitoring Wells Proposed for Sampling**

GO1S	K60S	S22	S81S
K56S	S21	S63S	

**Table 2-3 Proposed VIA Analytes and EPA-Proposed Screening Criteria**

<b>Compound</b>	<b>Screening Criteria (µg/L)</b>	<b>Compound</b>	<b>Screening Criteria (µg/L)</b>
1,1,1-Trichloroethane	714	Chlorobenzene	33.3
1,1,2-Trichloroethane	4.11	Chloroform	0.705
1,1-Dichloroethane	6.61	Cis-1,2-dichloroethene	no value (0.5)
1,1-Dichloroethene	18.7	Ethylbenzene	3.04
1,2,4-Trimethylbenzene	2.8	Isopropylbenzene	0.844
1,2-Dibromoethane	0.135	Methylene chloride	57.5
1,2-Dichloroethane	2.34	Naphthalene	3.98
1,2-Dichloropropane	2.12	Tetrachloroethene	0.55
1,3-Dichlorobenzene	no value (0.5)	Toluene	1850
1,4-Dichlorobenzene	2.25	Trans-1,2-dichloroethene	15.8
Benzene	1.36	Trans-1,3-Dichloropropene	0.84
Bromodichloromethane	0.94	Trichloroethene	2.89
Bromoform	101	Vinyl chloride	0.145
Carbon tetrachloride	0.135	Xylenes (total)	35.7

The existing monitoring wells proposed for sampling are located adjacent to the Dewey Avenue neighborhood. The wells are all screened across or near the water table. Table 2-4 summarizes the elevations of the screened intervals and recent water level elevations. Water quality data collected for this VIA will be supplemented with data from wells located along the southern and western UniFirst property boundaries collected as part of the UniFirst property vapor intrusion evaluation.

**Table 2-4 Summary of Screened Interval Elevations and Water-Level Elevations for Existing Wells Proposed for Sampling**

Well	Top of Screen Elevation (Ft.)	Bottom of Screen Elevation (Ft.)	Water Level Elevation (Ft.)	Water Level Measurement Date
GO1S	65.2	55.2	59.52	4/13/2009
K55S	67.7	66.7	NA	NA
K60S	58.1	57.1	NA	NA
S21	73.7	46.2	60.2 – 57.1	1991 Pilot Test
S22	81	41	75.4-65.6	1991 Pilot test
S63S	58	48	58.66	4/13/2009
S81S	44.7	34.7	52.45	4/14/2009
NA - Not Available				

## 2.4 GROUNDWATER DATA TIER I VALIDATION

To assure groundwater data meet all data quality objectives and are representative of Site conditions, a Region 1 Tier III data validation will be conducted. Data validation procedures are described in detail in Form R of the QAPP (GeoTrans, 2010). The data will be checked and assessed for completeness, accuracy, and usability. The quality control sampling results will be reviewed using both statistical and qualitative evaluations. Data will be qualified, as necessary, based on the criteria summarized in the QAPP (GeoTrans, 2010).

## 2.5 HEALTH & SAFETY PLAN

The Health and Safety Plan for the Northeast Quadrant of the Site (HASP) (GeoTrans, 2004) provides general health and safety information and establishes the minimum health and

safety related procedures and requirements associated with implementing this VIA. The HASP establishes the minimum health and safety related information for personnel engaged in activities at the Site. At the discretion of each firm/organization engaged in Site activities, the information presented may be supplemented by addenda or contractor-specific health and safety plans addressing the task(s) to be performed by their respective personnel.

## **2.6 COMMUNITY RELATIONS**

Because off-property work will be conducted as part of this VIA scope, it is expected that USEPA will provide public notifications prior to commencement of the work. At Superfund sites, USEPA has the primary responsibility for taking the lead role in community relations. The Grace and UniFirst team will actively support USEPA with community relations.

### **3 DATA EVALUATION**

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The groundwater-quality data collected will be compared with the EPA-proposed Screening Criteria as shown in Table 2-3. If the water-quality data indicate that VOC concentrations are below the EPA-proposed Screening Criteria identified in Table 2-3, no further vapor intrusion assessment work will be conducted in the study area. If the water quality data indicate that there is the potential for vapor intrusion into residential or commercial buildings in the study area, Grace and UniFirst will propose a phased approach and strategy to continue with further soil gas surveys in the study area. Additional investigations may include building surveys, sub-slab soil gas collection, or mathematical modeling.

#### **3.1 VIA REPORTING**

The results of the VIA will be presented in the VIA Report. The report will include:

- Objectives of the VIA;
- An overview of the monitoring well installation;
- Details regarding the groundwater quality samples and results; and
- Conclusions and recommendations.

## **4 SCHEDULE**

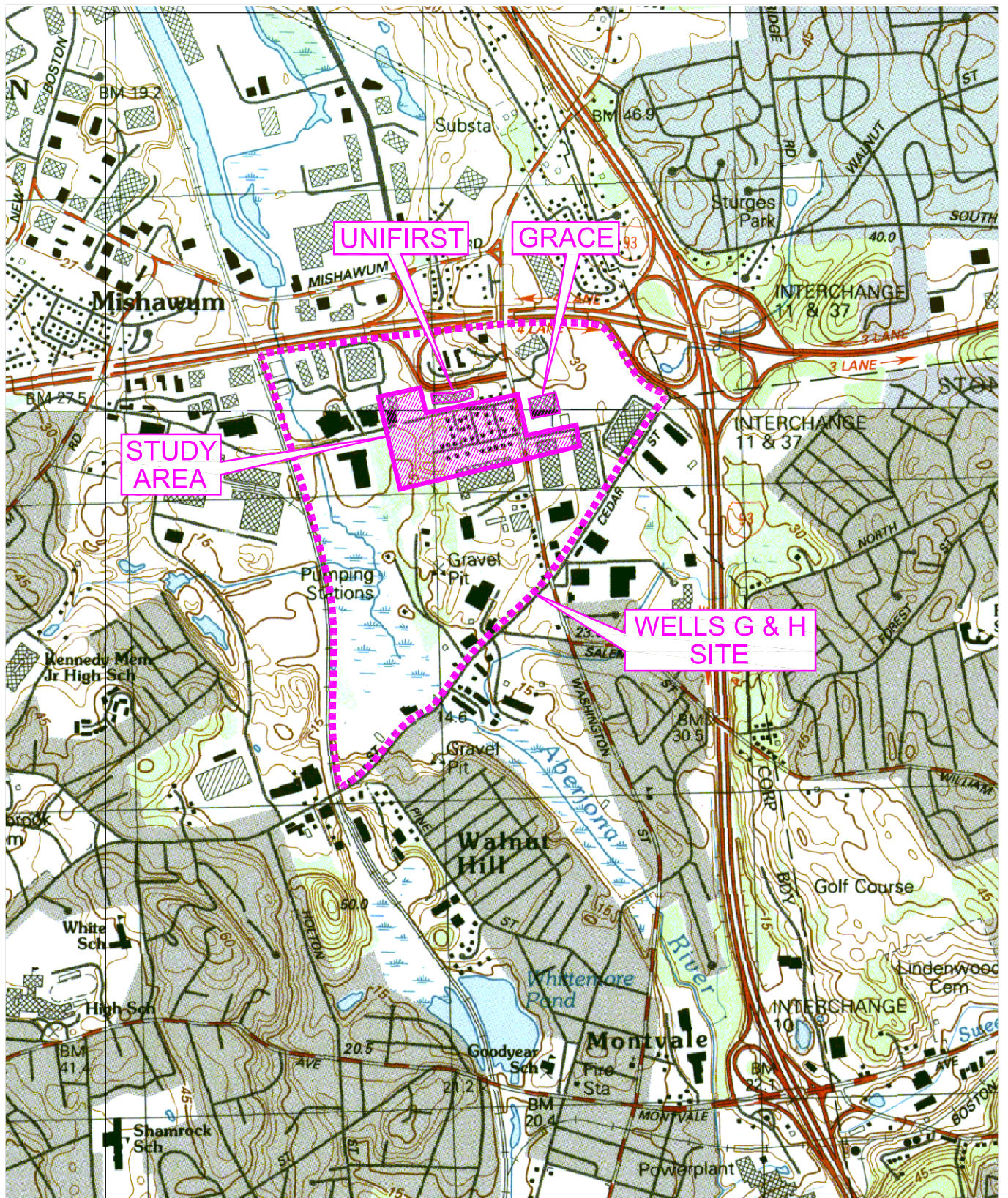
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Grace and UniFirst propose to install the new monitoring wells in the spring of 2010. The installation of the monitoring wells is anticipated to take approximately two weeks to complete. The first sampling event will be conducted two weeks after the development of the new wells is completed, and the second sampling event is proposed to be performed six months later, in the fall of 2010. UniFirst is submitting separately a work plan to meet USEPA's request for an assessment of the potential vapor intrusion pathway on the UniFirst property (The Johnson Company, 2010). Grace and UniFirst intend to coordinate scheduling of field work so that shallow groundwater sampling can be conducted concurrently under both work plans, to the extent possible. A report detailing the VIA will be provided to USEPA within 60 days after receipt of the validated analytical data from the second groundwater sampling event.

## 5 REFERENCES

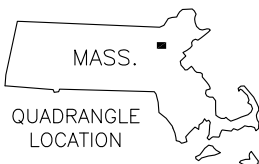
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- ATSDR, 1995, Public Health Assessment Addendum, Wells G&H, Woburn, Middlesex County, Massachusetts. U.S. Department of Public Health and Human Service, Public Health Service Agency for Toxic Substance and Disease Registry. December 1995.
- Harvard Project Services LLC, 2008. RD/RA Year 16 Annual Report for the UniFirst Site. November 12, 2008.
- GeoTrans, 2004, Health and Safety Plan Update For Northeast Quadrant of Wells G&H Site Long Term Monitoring Plan, April 21, 2004
- GeoTrans, 2008, W.R. Grace Remedial Action Annual Report, November 14, 2008.
- GeoTrans, 2010, Quality Assurance Project Plan, Vapor Intrusion Assessment, March 25, 2010.
- US Environmental Protection Agency, 2004, Second Five Year Review Report for Wells G&H Superfund Site, Woburn, Middlesex County, Massachusetts, September 30, 2004 (USEPA, 2004)
- Public Health Service Agency for Toxic Substances and Disease Registry, 1995, Public Health Assessment Addendum, Wells G&H, Woburn, Middlesex County,, Massachusetts, December 1995 (ATSDR, 1995).
- The Johnson Company, Inc., 2010. Indoor Air Quality and Vapor Intrusion Assessment Scope of Work, Revision 2, UniFirst Source Area Property, Wells G&H Superfund Site, Woburn, Massachusetts, March 2010.
- US Environmental Protection Agency, 2010, Letter re: EPA review of UniFirst's draft VI Scope of Work, dated October 9, 2009. February 25, 2010.
- US Environmental Protection Agency, 2009, Response to Source Area Properties Annual Reports, May 14, 2009.
- US Environmental Protection Agency, 2004, User's Guide for Evaluating Subsurface Vapor Intrusion Into Buildings (USEPA, 2004)
- US Environmental Protection Agency, 2002, Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (USEPA, 2002)



MassGIS Scanned U.S.G.S. Quadrangles:  
BOSTON NORTH, MASSACHUSETTS  
READING, MASSACHUSETTS

Contour Interval 3 Meters



TITLE:

## SITE AREA MAP

LOCATION:

Wells G & H, Woburn, MA



**GeoTrans, Inc.**  
A TETRA TECH COMPANY

APPROVED	JRB
DRAFTED	RMK
PROJECT#	117-3008048
DATE	OCTOBER 2009

FIGURE

**1-1**

NOTE: PROPERTY BOUNDARY INFORMATION IN THE DEWEY AVE. NEIGHBORHOOD FROM MAP TITLED "TAX MAP 26 OF THE CITY OF WOBURN MASSACHUSETTS" PREPARED BY THE CITY OF WOBURN ENGINEERING DEPARTMENT

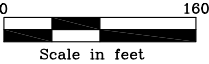


EXPLANATION

- APPROXIMATE PROPERTY BOUNDARY DEWEY AVE. NEIGHBORHOOD
- RECOVERY WELL LOCATION
- MONITORING WELL LOCATION
- 0.63 TETRACHLOROETHENE (ug/L)
- 10/9.8-DUPLICATE SAMPLE
- ND NOT DETECTED AT DETECTION LIMIT
- J ESTIMATED VALUE

\* G01 LAST SAMPLED 5/7/1996  
\*\* S63S & S82 LAST SAMPLED 10/15/2002

CONCENTRATIONS PRESENTED ARE FROM THE SHALLOWEST UNCONSOLIDATED DEPOSIT WELL AT EACH WELL CLUSTER



TITLE: 2009 TETRACHLOROETHENE CONCENTRATIONS  
DISTRIBUTED IN SHALLOW UNCONSOLIDATED DEPOSITS

LOCATION: Wells G & H, Woburn, MA.



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DATE	OCTOBER 2009

FIGURE  
1-2

NOTE: PROPERTY BOUNDARY INFORMATION IN THE DEWEY AVE. NEIGHBORHOOD FROM MAP TITLED "TAX MAP 26 OF THE CITY OF WOBURN MASSACHUSETTS" PREPARED BY THE CITY OF WOBURN ENGINEERING DEPARTMENT

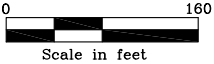


EXPLANATION

- APPROXIMATE PROPERTY BOUNDARY DEWEY AVE. NEIGHBORHOOD
- RW10 ○ RECOVERY WELL LOCATION
- UC6 ● MONITORING WELL LOCATION
- 5.4 TRICHLOROETHENE (ug/L)
- 3.1/3.2 --DUPLICATE SAMPLE
- ND NOT DETECTED AT DETECTION LIMIT
- J ESTIMATED VALUE

\* G01 LAST SAMPLED 5/7/1996  
\*\* S63S & S82 LAST SAMPLED 10/15/2002

CONCENTRATIONS PRESENTED ARE FROM THE SHALLOWEST UNCONSOLIDATED DEPOSIT WELL AT EACH WELL CLUSTER



TITLE: 2009 TRICHLOROETHENE CONCENTRATIONS  
DISTRIBUTED IN SHALLOW UNCONSOLIDATED DEPOSITS

LOCATION: Wells G & H, Woburn, MA.



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FIGURE  
1-3

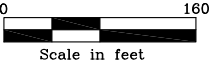
NOTE: PROPERTY BOUNDARY INFORMATION IN THE DEWEY AVE. NEIGHBORHOOD FROM MAP TITLED "TAX MAP 26 OF THE CITY OF WOBURN MASSACHUSETTS" PREPARED BY THE CITY OF WOBURN ENGINEERING DEPARTMENT



EXPLANATION

- APPROXIMATE PROPERTY BOUNDARY DEWEY AVE. NEIGHBORHOOD
- RW10 RECOVERY WELL LOCATION
- UC6 MONITORING WELL LOCATION
- 27 1,2-DICHLOROETENE (TOTAL) (ug/L)
- 1.5/1.7-DUPLICATE SAMPLE
- ND NOT DETECTED AT DETECTION LIMIT
- J ESTIMATED VALUE
- \* G01 LAST SAMPLED 5/7/1996
- \*\* S63S & S82 LAST SAMPLED 10/15/2002

CONCENTRATIONS PRESENTED ARE FROM THE SHALLOWEST UNCONSOLIDATED DEPOSIT WELL AT EACH WELL CLUSTER



TITLE: 2009 1,2-DICHLOROETHENE CONCENTRATIONS  
DISTRIBUTED IN SHALLOW UNCONSOLIDATED DEPOSITS

LOCATION: Wells G & H, Woburn, MA.



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DATE	OCTOBER 2009

FIGURE  
1-4

NOTE: PROPERTY BOUNDARY INFORMATION IN THE DEWEY AVE. NEIGHBORHOOD FROM MAP TITLED "TAX MAP 26 OF THE CITY OF WOBURN MASSACHUSETTS" PREPARED BY THE CITY OF WOBURN ENGINEERING DEPARTMENT

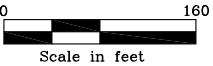


EXPLANATION

- APPROXIMATE PROPERTY BOUNDARY DEWEY AVE. NEIGHBORHOOD
- RW10 RECOVERY WELL LOCATION
- UC6 MONITORING WELL LOCATION
- ND VINYL CHLORIDE (ug/L)
- ND/ND -DUPLICATE SAMPLE
- ND NOT DETECTED AT DETECTION LIMIT
- J ESTIMATED VALUE

\* G01 LAST SAMPLED 5/7/1996  
\*\* S63S & S82 LAST SAMPLED 10/15/2002

CONCENTRATIONS PRESENTED ARE FROM THE SHALLOWEST UNCONSOLIDATED DEPOSIT WELL AT EACH WELL CLUSTER



TITLE: 2009 VINYL CHLORIDE CONCENTRATIONS  
DISTRIBUTED IN SHALLOW UNCONSOLIDATED DEPOSITS

LOCATION: Wells G & H, Woburn, MA.



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PROJECT#	117-3008048
DATE	OCTOBER 2009

FIGURE  
1-5

G:\GRACE CENTRAL\2010\01-10\_VAPOR-WELLS\NE-QUAD-WDATA-PRO-WELLS.DWG




NOTE: PROPERTY BOUNDARY INFORMATION IN THE DEWEY AVE. NEIGHBORHOOD FROM MAP TITLED "TAX MAP 26 OF THE CITY OF WOBURN MASSACHUSETTS" PREPARED BY THE CITY OF WOBURN ENGINEERING DEPARTMENT

## EXPLANATION

- APPROXIMATE PROPERTY BOUNDARIES DEWEY AVE. NEIGHBORHOOD
- RW10 ○ RECOVERY WELL LOCATION
- UC6 ○ MONITORING WELL LOCATION
- UG14 ● PROPOSED NEW WATER TABLE MONITORING WELL
- S81 ○ SHALLOWEST WELL AT EXISTING LOCATION PROPOSED FOR SAMPLING

0 160  
Scale in feet

TITLE: <b>MONITORING WELLS FOR VI ASSESSMENT</b>			
LOCATION: <b>Wells G &amp; H, Woburn, MA.</b>			
 <b>GeoTrans, Inc.</b> <small>A TETRA TECH COMPANY</small>	APPROVED	JRB	FIGURE <b>2-1</b>
	DRAFTED	RMK	
	PROJECT#	117-3008048	
DATE		FEB 2010	